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AMERSHAM BIOSCIENCES
PATENT DEPARTMENT
800 CENTENNIAL AVENUE
PISCATAWAY, NJ 08855

EXAMINER

VO, HAI

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Paper No. 0218

Application Number: 09/763,788
Filing Date: April 25, 2001
Appellant(s): LARSSON ET AL.

Royal N. Ronning, Jr.
For Appellant

MAR 03 2004

EXAMINER'S ANSWER

This is in response to the appeal brief filed 08/11/2003.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

No amendment after final has been filed.

MAR 03 2004

(5) *Summary of Invention*

The summary of invention contained in the brief is deficient because Appellant's brief does not include the pages and lines from which the summary is described in Appellant's specification.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

Appellant's brief includes a statement that claims 1-12 and 17-19 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) *Prior Art of Record*

5,155,144	MANGANARO et al	10-1992
4,111,838	SCHAEFFER et al	09-1978

WO 93/19115, Larsson, Per, "Super Porous Polysaccharide Gels", September 30, 1993.

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-12, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 93/19115 in view of Lihme et al (US 5,866,006).

In light of the specification (page 2, lines 18-21), the recitation "with exception of the case that the composite contains an electrically monolithic secondary component which is intended to be, or is connected between two electrodes" means that the composite containing an electrically monolithic secondary component which is connected between two electrodes is completely excluded from the claim. WO'115 teaches a porous polysaccharide having a net work of two continuous phases, an aqueous polysaccharide phase and an organic phase, wherein the aqueous polysaccharide phase includes small diameter pores which are interconnected to give flow passages through the gel, and the organic phase is the superpore-forming phase comprising large diameter flow through pores (abstract). WO'115 discloses the polysaccharide comprising superpores in the range of 5 to 100 microns and micropores in the range of 30 to 500 Angstroms (page 3), meeting the specific ranges disclosed at page 1, lines 10-14 of Appellant's specification. WO'115 does not specially disclose the super-porous polysaccharide containing the gel phase with micropores outside the

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superpores. However, the pore arrangement would inherently be present since the WO'115 is using the same materials and the same mixing technique to prepare the porous material as Appellant. WO'115 is silent as to the secondary component of the composite material. Lihme discloses the use of conglomerating agents in combination with polysaccharide in chromatographic procedures for binding, entrapping or carrying the polysaccharide (column 21, line 1 to column 22, line 1-60). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a conglomerating agent as the secondary component of the porous material in WO'115 motivated by the desire to bind, entrap or carry the polysaccharides, which is important to the expectation of successfully practicing the invention of WO'115, thus suggesting the modification.

With regard to claims 3-5, since the conglomerate of Lihme acts as the filler and is mixed with the super-porous material of WO'115, it is the examiner's position that the conglomerate would be substantially inherently present anywhere in the matrix, i.e., outside the super-pores but inside the main component's gel phase or in the super-pores of the main component or present in both the super-pores and in the gel-phase of the main-component.

With regard to claims 6-8, and 10, WO'115 discloses the super-porous material being coupled with various ligands (examples 8, 9 and 12).

With regard to claim 9, Lihme discloses the ligand being coupled with the conglomerate (column 18, lines 39-58). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to couple the ligand

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with the conglomerate motivated by the desire to keep the desired functions of the active polysaccharides intact before use.

With regard to claim 11, WO'115 discloses the super-porous material having the macropores with an average pore diameter in the gel phase from 5 to 100 microns (page 4). Lihme teaches the conglomerate having the pore size from 50-500 microns (column 14, line 53). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a conglomerate having the average pore size greater than that of the macropore in the gel phase of the main component motivated by the desire to control the flow rate of the separation.

With regard to claim 12, WO'115 discloses the porous material being prepared as a continuous bed (page 6).

With regard to claims 17-19, Lihme reads on the claim limitations (column 8, line 62 et seq.). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the composite material of WO'115 as modified by Lihme for variety applications as set forth in the claims because such is a, desirable, excellent solid phase matrix for use in variety applications and Lihme provides details to practice the invention of WO'115.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 93/19115 in view of Schaeffer et al (US 4,111,838).

WO'115 teaches a porous polysaccharide having a net work of two continuous phases, an aqueous polysaccharide phase and an organic phase, wherein the aqueous

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polysaccharide phase includes small diameter pores which are interconnected to give flow passages through the gel, and the organic phase is the superpore-forming phase comprising large diameter flow through pores (abstract). WO'115 discloses the polysaccharide comprising superpores in the range of 5 to 100 microns and micropores in the range of 30 to 500 Angstroms (page 3), meeting the specific ranges disclosed at page 1, lines 10-14 of Appellant's specification. WO'115 does not specially disclose the super-porous polysaccharide containing the gel phase with micropores outside the superpores. However, the pore arrangement would inherently be present since the WO'115 is using the same materials and the same mixing technique to prepare the porous material as Appellant. WO'115 is silent as to the secondary component of the composite material. Schaeffer discloses a chromatographic material comprising an inorganic support-polysaccharide particle matrix. The matrix comprises an inorganic support that has a high surface density of hydroxyl groups and covalently attached to polysaccharide particles (abstract). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ an inorganic support as the secondary component of the porous material in WO'115 motivated by the desire to bind, or carry the polysaccharides, which is important to the expectation of successfully practicing the invention of WO'115, thus suggesting the modification.

With regard to claims 3-5, since the inorganic support of Schaeffer is mixed with the super-porous material of WO'115, it is the examiner's position that the inorganic support would be substantially inherently present anywhere in the matrix, i.e., outside

the super-pores but inside the main component's gel phase or in the super-pores of the main component or present in both the super-pores and in the gel-phase of the main-component.

With regard to claims 6-8, and 10, WO'115 discloses the super-porous material being coupled with various ligands (examples 8, 9 and 12).

With regard to claim 9, Schaeffer discloses the ligand being coupled with the inorganic support to control the multipoint attachments of the proteins (column 4, lines 3-30). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to couple the ligand with the inorganic support motivated by the desire to control the multipoint attachments of the proteins.

With regard to claim 11, WO'115 discloses the super-porous material having the macropores with an average pore diameter in the gel phase from 5 to 100 microns (page 4). Schaeffer teaches the inorganic support having the pore size from 100-1000 microns (column 3, line 56). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ an inorganic support having the average pore size greater than that of the macropore in the gel phase of the main component motivated by the desire to control the flow rate of the separation.

With regard to claim 12, WO'115 discloses the porous material being prepared as a continuous bed (page 6).

Claims 1-12, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 93/19115 in view of Manganaro et al (US 5,155,144).

WO'115 teaches a porous polysaccharide having a net work of two continuous phases, an aqueous polysaccharide phase and an organic phase, wherein the aqueous polysaccharide phase includes small diameter pores which are interconnected to give flow passages through the gel, and the organic phase is the superpore-forming phase comprising large diameter flow through pores (abstract). WO'115 discloses the polysaccharide comprising superpores in the range of 5 to 100 microns and micropores in the range of 30 to 500 Angstroms (page 3), meeting the specific ranges disclosed at page 1, lines 10-14 of Appellant's specification. WO'115 does not specially disclose the super-porous polysaccharide containing the gel phase with micropores outside the superpores. However, the pore arrangement would inherently be present since the WO'115 is using the same materials and the same mixing technique to prepare the porous material as Appellant. WO'115 is silent as to the secondary component of the composite material. Manganaro discloses that the microporous sheet for use in chromatography apparatus comprises a polymeric matrix including polyvinyl chloride beads and active polysaccharide (abstract, column 2, lines 65-67). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ polyvinyl chloride beads as the secondary component of the porous material in WO'115 motivated by the desire to bind the active polysaccharides, which is important to the expectation of successfully practicing the invention of WO'115, thus suggesting the modification.

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With regard to claims 3-5, since the polyvinyl chloride beads of Manganaro is mixed with the super-porous material of WO'115, it is the examiner's position that the polyvinyl chloride beads would be substantially inherently present anywhere in the matrix, i.e., outside the super-pores but inside the main component's gel phase or in the super-pores of the main component or present in both the super-pores and in the gel-phase of the main-component.

With regard to claims 6-8, and 10, WO'115 discloses the super-porous material being coupled with various ligands (examples 8, 9 and 12).

With regard to claim 9, Manganaro discloses the porous sheet being capable of selectively binding targeted biological materials via ligand binding sites to keep the desired functions of the active polysaccharide intact before use (column 3, lines 25-40). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to couple the ligand with the polyvinyl chloride beads motivated by the desire to keep the desired functions of the active substance intact or may be reestablished before use.

With regard to claim 11, WO'115 discloses the super-porous material having the macropores with an average pore diameter in the gel phase from 5 to 100 microns (page 4). Manganaro teaches the polyvinyl chloride beads having the pore size of 140 microns (column 12, line 2). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ an inorganic support having the average pore size greater than that of the macropore in the gel

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phase of the main component motivated by the desire to control the flow rate of the separation.

With regard to claim 12, WO'115 discloses the porous material being prepared as a continuous bed (page 6).

With regard to claim 18, WO'115 discloses the super-porous material being used in an affinity chromatography and a bioreactor (column 2, lines 55-62).

(11) Response to Argument

Examiner's comments regarding Appellant's Issue 1.

Appellant argues that since emulsification of polysaccharides occurs only within a relatively narrow window of properties such as density, viscosity and hydrophilicity, the addition of other materials to the polysaccharide to form a composite material can change these properties and disturb the emulsification. The arguments are not found persuasive. In the first place, there is no evidence to support Appellant's statement. Secondly, such properties as argued by Appellant have not been included in the claims. Further, Appellant argues that it would not have been obvious to combine the teachings of Lihme reference with that of the WO'115 patent, since there would be no expectation of success to obtain suitable composite materials. The examiner disagrees. WO'115 teaches a porous polysaccharide comprising superpores in the range of 5 to 100 microns and micropores in the range of 30 to 500 Angstroms (page 3). WO'115 does not specially disclose the porous polysaccharide containing the gel phase with micropores outside the superpores. However, the pore arrangement would inherently be present since the WO'115 is using the same materials and the same mixing technique

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to prepare the porous material as Appellant. WO'115 does not specifically disclose the secondary component of the composite material. Lihme discloses the use of conglomerating agents in combination with active polysaccharide in chromatographic procedures for binding, entrapping or carrying the polysaccharide (column 21, line 1 to column 22, line 1-60). Additionally, Appellant argues that the superpores and the micropores defined in the present invention are quite different from those disclosed by WO'115. The micropores of WO'115 are not interconnected to give flow passages to the gel but rather diffusion pores. The superpores of WO'115 are flow through pores whereas Appellant's superpores are defined as meaning "a flow which can give convective mass transport should be able to be applied through the pores". The examiner disagrees. It appears that the superpores and micropores disclosed in WO'115 have the size within the claimed ranges. The porous polysaccharide of WO'115 and Appellant's composite material are both used in the chromatography separation. It is not seen that the superpores and micropores in the WO'115 patent would have performed differently from those disclosed in the present invention. Accordingly, the examiner believes the motivation to combine two cited references is sufficient and proper and therefore, the art rejections should be sustained.

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Examiner's comments regarding Appellant's Issues 2 and 3.

Appellant reiterated positions taken with respect to the other rejections and the examiner's comments set forth above are equally pertinent in the support of these rejections as well.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

HV

Hai Vo
February 23, 2004

Conferees

Terrel Morris, SPE 1771

Deborah Jones, SPE 1775 *Jones*

AMERSHAM BIOSCIENCES
PATENT DEPARTMENT
800 CENTENNIAL AVENUE
PISCATAWAY, NJ 08855



TERREL MORRIS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

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